

SYNTHESES OF SPIRO COMPOUNDS RELATED TO ERYTHRINA ALKALOID

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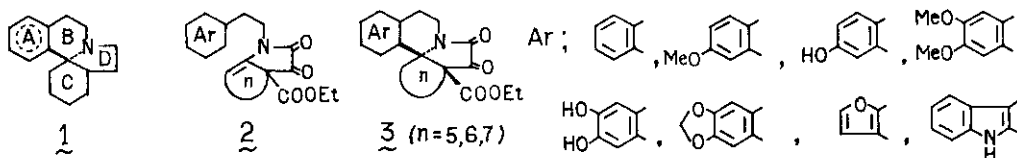
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The report described several new synthetic routes to spiro-type compounds 1 related to erythrina alkaloid which is known as having curare-like action. Our method synthesizing erythrins utilizes one of the following three reactions of dioxopyrroline derivatives.

I. Erythrins by Intramolecular Nucleophilic Cyclization of Dioxopyrrolines.

A dioxopyrroline 2 on treatment with acid easily cyclized to yield an erythrinan 3. Thus, the 10 compounds of rings A and C variants were prepared by this method in yield of 50-100%. As a cyclizing reagent, PPA and anhy.H₃PO₄ are the most general, but sometimes PPE, BF₃-Et₂O, and AgClO₄ are superior.



II. Erythrins by Cycloaddition of Activated Butadienes to Dioxopyrrolines.

1) 1,4-Cycloaddition

Thermal cycloaddition of the dioxopyrroline 4 and 2-silyloxybutadienes proceeded with regio- and stereoselective manner to give 1,4-cycloadducts 5 possessing various functional groups (R'=H, OMe, OTMS) on ring C in good yield.

2) 1,2-Cycloaddition followed by Thermal 1,3-Rearrangement.

Photocycloaddition of the butadienes with 4 gives regioselectively the 1,2-cycloadduct 6, which thermally rearranges to the erythrins 7 (R'=H, OMe), regioisomers with the Diels-Alder adducts 5, respectively.

Thus, we developed new three very effective methods synthesizing various spiro-type compounds related to erythrina alkaloid.

